

1 APPLICATION FOR UNITED STATES LETTERS PATENT

2 ON INVENTION FOR:

3 JOINTS FOR CONSTRUCTING A SHEAR WALL

4 BY INVENTOR: Robert Nasimov

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6 Agt. Doc. No.: NASR64A

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8 RICHARD L. MILLER

9 REGISTERED PATENT AGENT

10 12 PARKSIDE DRIVE

11 DIX HILLS, NEW YORK 11746-4879

12 PHONE: (631) 499-4343

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14 TO ALL WHOM IT MAY CONCERN:

15 BE IT KNOWN that I, Robert Nasimov, a citizen of
16 THE UNITED STATES OF AMERICA and resident of: Rego Park, NY
17 11374 have invented certain new and useful improvements in
18 a(n): JOINTS FOR CONSTRUCTING A SHEAR WALL of which the
19 following is a full, clear, concise and exact description:

1 Inventor: Robert Nasimov
2 Invention: JOINTS FOR CONSTRUCTING A SHEAR WALL
3 DOC. No.: NASR64A

4 BACKGROUND OF THE INVENTION

5 Field of the Invention:

6 The present invention relates to joints for a wall. More
7 particularly, the present invention relates to joints for constructing a
8 shear wall.

9 Description of the Prior Art:

10 Numerous innovations for wall brackets have been provided in the
11 prior art that will be described. Even though these innovations may be
12 suitable for the specific individual purposes to which they address,
13 however, they differ from the present invention.

14 A FIRST EXAMPLE U.S. Patent No. 3,963,210 Macklin teaches disclosed
15 is a support for use in setting anchor bolts, and the like, in a
16 monolithic poured concrete slab and the method of using the same. The
17 support has a plate with a plurality of elongate legs extending from one
18 side thereof. A wooden block is attached to the other side of the plate
19 by nails extending through bores in the plate. A template is provided
20 with a plurality of bores of a size to receive anchor bolt assemblies
21 therein. The bores in the template have a spacial relationship according
22 to the desired location of the anchor bolts in the slab. A central
23 referencing hole is provided in the center of the template for releasably
24 attaching the template to the upper surface of the wooden block during the
25 installation procedure. To use the apparatus, the legs of the support are
26 first embedded in the subsoil of the slab before the slab is cast. The
27 upper surface of the block is leveled in position at a desired height.
28 A nail is inserted in the wooden block at the theoretical center of the

1 column. Concrete is poured in the area around the support. Next, the
2 template is positioned with the referencing hole over the finishing nail
3 and the anchor bolts are forced down into the concrete. The concrete is
4 allowed to set and the template and wooden block are then removed leaving
5 the anchor bolts in the correct position for attaching the column.

6 A SECOND EXAMPLE U.S. Patent No. 4,530,194 Linton et al. teaches a
7 bracket for use at a node point in a framework between two horizontal
8 members and vertical member, said bracket comprising a first channel
9 member having a base and two upstanding sides walls, the longitudinal axis
10 of which is aligned with the axis of said two horizontal members, said
11 channel member being provided with means defining two transverse partition
12 walls defining a space within the first channel member intermediate the
13 ends thereof for accommodating the base of the substantially vertical
14 member, and defining spaces between the partition walls and the ends of
15 the channel to accommodate the ends of the horizontal members, a further
16 element being provided for mounting said channel member on a sub-
17 structure.

18 A THIRD EXAMPLE U.S. Patent No. 4,875,314 Boilen teaches a
19 structural connection system for resisting uplift loads on the shear walls
20 for each level of a wood frames structure includes anchors for each level.
21 The system, employed at least at the lateral ends of the shear walls,
22 compressively restrains the shear wall against upward movement. The
23 anchors, which are vertically aligned, are coupled to one another through
24 tie rods. A tie rod connects the anchor for the bottom floor to a
25 foundation anchor embedded in the foundation. The anchors and tie rods
26 are positioned between pairs of closely spaced vertical framing elements,
27 such as studs. Uplift loads for each level are transferred to the
28 foundation through the connection system. This eliminates any
29 accumulation of uplift loads from level to level.

30 A FOURTH EXAMPLE U.S. Patent No. 5,375,384 Wolfson teaches a hold
31 down apparatus is provided for securing a shear wall to a concrete base.
32 The apparatus includes an upright tie member and a cooperating anchoring

1 member. The upright tie member has (1) a tubular base, (2) a pair of
2 spaced, upstanding anchoring plates mounted to the base and adapted to
3 received post, preferably an end post, of the shear wall and (3) a
4 plurality of fasteners for extending through the anchoring plates and the
5 post. The anchoring member includes a plate, a fastener for the upright
6 tie member secured to the plate and a pair of support legs for the plate.

7 A FIFTH EXAMPLE U.S. Patent No. 6,148,583 Hardy teaches the
8 reinforcing brace frame is utilized in building walls as a complete system
9 of protection against both the severe shear stress and uplifting
10 encountered during tornadoes, hurricanes and earthquakes. The reinforcing
11 brace frame includes two vertically-spaced horizontally extending frame
12 members joined at their opposite lends, to two horizontally-spaced
13 vertically extending frame members, and a diagonal member rigidly
14 connected to opposite ends of the horizontally extending frame members.
15 The reinforcing brace frame can also include spaced vertical support
16 members between the vertical frame members. The reinforcing brace frame
17 is directly attached to a concrete foundation by shear bolts and hold down
18 bolts. Consequently, the reinforcing brace frame provides increased
19 resistance against simultaneous shear stress and uplifting, eliminating
20 the need for plywood shear panels.

21 A SIXTH EXAMPLE U.S. Patent Application Pub. No. US2002/0020136 A1
22 to Mueller teaches a two-piece bracket adapted to resist forces in both
23 tension and compression. The tension/compression bracket is formed from
24 stamped, plate steel and is preassembled by clinching. The
25 tension/compression bracket provides a range of adjustability of
26 attachment to allow for a limited range of placement of other components
27 that attach to the tension/compression bracket. In one embodiment, the
28 tension/compression bracket includes a resilient resistance to tension
29 forces. The resilient resistance is provided by a high spring constant
30 coil spring. The resilient resistance provides a limited degree of
31 movement under tension. The limited degree of movement is chosen by
32 component selection to be non-damaging.

1 A SEVENTH EXAMPLE U.S. Patent Application Pub. No. US2002/0066247
2 A1 to Leek teaches a connector for attaching a first building structural
3 member to a second building structural member in conjunction with
4 fasteners and an anchor member to resist forces on buildings imposed by
5 earthquakes, hurricanes, tornadoes and other similar cataclysmic forces
6 is made with a strap and a standoff base. The standoff base receives the
7 anchor member, and bears upon the strap. The strap is connected the first
8 building structural member by means of the fasteners. The first building
9 structural member bears upon the standoff base while being lifted above
10 the anchor member by the standoff base.

11 It is apparent that numerous innovations for wall brackets have been
12 provided in the prior art that are adapted to be used. Furthermore, even
13 though these innovations may be suitable for the specific individual
14 purposes to which they address, however, they would not be suitable for
15 the purposes of the present invention as heretofore described.

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SUMMARY OF THE INVENTION

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ACCORDINGLY, AN OBJECT of the present invention is to provide joints for constructing a shear wall that avoids the disadvantages of the prior art.

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ANOTHER OBJECT of the present invention is to provide joints for constructing a shear wall that is simple to use.

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BRIEFLY STATED, STILL ANOTHER OBJECT of the present invention is to provide a joints for constructing a shear wall. The joints include a least an intermediate base joint, and a combination ceiling and floor joint. Each joint includes a bracket, a track wall, an optional base late, a stud, and at least two diagonal braces. The bracket is integrally formed with the shear wall, attached the shear wall to a substrate and prevents uplift of the shear wall. The bracket includes a base from which a pair of side walls upwardly extend. The track wall includes a base from which a pair of side walls upwardly extend, functions as sole and top plates, and sits attachingly in the bracket. The stud extends attachingly from the bracket. The optional base plate, when present, sits attachingly in the bracket and distributes load of the stud. The at least two diagonal braces extend attachingly diagonally outwardly from the pair of side walls of the bracket, respectively.

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The novel features which are considered characteristic of the present invention are set forth in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of the specific embodiments when read and understood in connection with the accompanying drawing.

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BRIEF DESCRIPTION OF THE DRAWING

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The figures of the drawing are briefly described as follows:

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FIGURE 1 is a diagrammatic elevational view of a shear wall utilizing joints of the present invention;

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FIGURE 2 is a diagrammatic perspective view of the bracket utilized to construct the joints of the present invention;

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FIGURE 3 is an enlarged diagrammatic perspective view of the area generally enclosed by the dotted curve identified by arrow 3 in figure 1 of a intermediate base joint of the present invention utilizing the bracket shown in figure 2;

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FIGURE 4 is a diagrammatic elevational view taken generally in the direction of arrow 4 in figure 3;

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FIGURE 5 is a diagrammatic top plan view taken generally in the direction of arrow 5 in figure 3;

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1 FIGURE 6 is an enlarged diagrammatic perspective view of the area
2 generally enclosed by the dotted curve identified by arrow 6
3 in figure 1 of a base corner joint of the present invention
4 utilizing the bracket of the present invention shown in figure
5 2;

6 FIGURE 7 is a diagrammatic top plan view taken generally in the
7 direction of arrow 7 in figure 6; and

8 FIGURE 8 is an enlarged diagrammatic perspective view of the area
9 generally enclosed by the dotted curve identified by arrow 8
10 in figure 1 of a ceiling and floor joint of the present
11 invention utilizing the bracket of the present invention shown
12 in figure 2.

1 LIST OF REFERENCE NUMERALS UTILIZED IN THE DRAWING

2	10	joints of present invention for constructing shear wall 12
3	12	shear wall
4	14	bracket
5	16	substrate
6	18	base of bracket 14 for abutting against substrate 16
7	20	pair of side walls of bracket 14
8	22	pair of longitudinal edges of base 18 of bracket 14
9	24	pair of through bores in base 18 of bracket 14 for use in
10		affixing bracket 14 to substrate 16
11	26	plurality of through bores in each side wall of pair of side
12		walls 20 of bracket 14
13	27	typical joint
14	28	track wall
15	30	base of track wall 28
16	32	pair of side walls of track wall 28
17	34	pair of longitudinal edges of base 30 of track wall 28
18	35	pair of through bores in base 30 of track wall 28
19	36	base plate
20	38	pair of through bores in base plate 36
21	40	stud
22	42	end of stud 40
23	44	at least two diagonal braces
24	46	end of each brace of at least two diagonal braces 44
25	48	plurality of through bores in end 46 of each brace of at least
26		two diagonal braces 44
27	50	intermediate base joint
28	52	concrete foundation of substrate 16
29	54	pair of anchor bolts
30	56	pair of nuts
31	58	end base joint

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| 1 | 60 | ceiling and floor joint |
| 2 | 62 | upper header of substrate 16 |
| 3 | 64 | lower header of substrate 16 |
| 4 | 66 | floor joists of substrate 16 |
| 5 | 68 | stud of substrate 16 |
| 6 | 70 | pair of through bores in upper header 62 of substrate 16 |
| 7 | 72 | pair of through bores in lower header 64 of substrate 16 |
| 8 | 74 | pair of through bolts |

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

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Referring now to the figures, in which like numerals indicate like parts, and particularly to figure 1, the joints of the present invention are shown generally at 10 for constructing a shear wall 12.

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Each of the joints 10 comprises a bracket 14. The bracket 14 is integrally formed with the shear wall 12, attaches the shear wall 12 to a substrate 16, and prevents uplift of the shear wall 12.

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The specific configuration of the bracket 14 can best be seen in figure 2, and as such, will be discussed with reference thereto.

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The bracket 14 consists of a base 18 and a pair of side walls 20. The base 18 of the bracket 14 is for abutting against the substrate 16 and has a pair of longitudinal edges 22 from which the pair of side walls 20 of the bracket 14 upwardly extend, respectively, so as to allow the bracket 14 to have a generally and substantially U-shape in lateral cross section.

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The base 18 of the bracket 14 has a pair of through bores 24 and each side wall 20 of the bracket 14 has a plurality of through bores 26. The pair of through bores 24 in the base 18 of the bracket 14 are for use in affixing the bracket 14 to the substrate 16.

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The specific configuration of a typical joint 27 of the present invention can best be seen in figures 3-5, and as such, will be discussed with reference thereto.

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The typical joint 27 comprises a track wall 28. The track wall 28 functions as a sole plate and a top plate and consists of a base 30 and a pair of side walls 32. The base 30 of the track wall 28 has a pair of longitudinal edges 34 from which the pair of side walls 32 of the track wall 28 upwardly extend, respectively, so as to allow the track wall 28 to have a generally and substantially U-shape in lateral cross section, and a pair of through bores 35 that align with the pair of through bores 24 in the base 18 of the bracket 14.

1 The track wall 28 sits in the bracket 14, with the base 30 of the
2 track wall 28 abutting against the base 18 of the bracket 14, and with the
3 side walls 32 of the track wall 28 abutting against the side walls 20 of
4 the bracket 14, respectively, so as to allow the bracket 14 to capture the
5 track wall 28.

6 The typical joint 27 further comprises a base plate 36. The base
7 plate 36 sits in the bracket 14, abuts against the base 30 of the track
8 wall 28, and has a pair of through bores 38 that align with the pair of
9 through bores 24 in the base 30 of the track wall 28, respectively.

10 The typical joint 27 further comprises a stud 40. The stud 40
11 extends from the bracket 14 and has an end 42 that abuts against, and is
12 affixed to, the pair of side walls 20 of the bracket 14, abuts against the
13 base 30 of the track wall 28 when the base plate 36 is not present so as
14 to allow the track wall 28 to distribute the load of the stud 40 to the
15 bracket 14, and abuts against the base plate 36 when the base plate 36 is
16 present so as to allow the base plate 36 to distribute the load of the
17 stud 40 to the track wall 28 and ultimately to the bracket 14.

18 The typical joint 27 further comprises at least two diagonal braces
19 44. Each of the at least two diagonal braces 44 is flat, extends
20 diagonally outwardly from the bracket 14, abuts against, and is affixed
21 to, a respective side wall 20 of the bracket 14, and has an end 46 with
22 a plurality of through bores 48.

23 The plurality of through bores 48 in the end 46 of each of the at
24 least two diagonal braces 44 align with corresponding through bores 26 in
25 the respective side wall 20 of the bracket 14.

26 Even though figures 3-5 have been utilized to depict the typical
27 joint 27, figures 3-5 also specifically depict an intermediate base joint
28 50.

29 In constructing the intermediate base joint 50, the substrate 16 is
30 a concrete foundation 52, the track wall 28 extends outwardly from both
31 ends of the base 18 of the bracket 14, the pair of through bores 24 in the
32 base 18 of the bracket 14, the pair of through bores 35 in the base 30 of

1 the track wall 28, and the pair of through bores 38 in the base plate 36
2 receive a pair of anchor bolts 54 extending upwardly out of the concrete
3 foundation 52 that ultimately receive a pair of nuts 56, respectively, the
4 stud 48 extends centrally upwardly from the base plate 36 so as to be
5 straddled by the pair of nuts 56, and the at least two diagonal braces 44
6 are four, a pair of each extending from each side wall 20 of the bracket
7 14, diagonally outwardly in opposite directions.

8 Another joint is that of an end base joint 58, which can best be
9 seen in figures 6 and 7, and as such, will be discussed with reference
10 thereto.

11 In constructing the end base joint 58, the substrate 16 is the
12 concrete foundation 52, the track wall 28 extends outwardly from one end
13 of the base 18 of the bracket 14, only an outermost one of the pair of
14 through bores 24 in the base 18 of the bracket 14, an aligned one of the
15 pair of through bores 35 in the base 30 of the track wall 28, and an
16 aligned one of the pair of through bores 38 in the base plate 36 receive
17 the anchor bolt 54 extending upwardly out of the concrete foundation 52
18 that ultimately receives a nut 56, the stud 48 extends upwardly from an
19 outermost end of the base plate 36, and the at least two diagonal braces
20 44 extend diagonally inwardly.

21 Another joint is that of a ceiling and floor joint 60, which can
22 best be seen in figure 8, and as such, will be discussed with reference
23 thereto.

24 In constructing the ceiling and floor joint 60, the substrate 16 is
25 an upper header 62 and a lower header 64 that are spaced-apart by floor
26 joists 66 and a stud 68, two brackets 14 are utilized, the base 18 of one
27 bracket 14 is for abutting against the upper header 62, the base 18 of the
28 other bracket 14 is for abutting against the lower header 64 and is in
29 alignment with the one bracket 14, two track walls 28 are utilized, one
30 track wall 28 extends outwardly from both ends of the base 18 of the one
31 bracket 14, the other track wall 28 extends outwardly from both ends of
32 the base 18 of the other bracket 14, the pair of through bores 24 in the

1 base 18 of the one bracket 14, the through bores 35 in the base 30 of the
2 one track wall 28, a pair of through bores 70 in the upper header 62, a
3 pair of through bores 72 in the lower header 64, the pair of through bores
4 24 in the base 18 of the other bracket 14, and the pair of through bores
5 35 in the base 30 of the other track wall 28 receive a pair of through
6 bolts 74, two studs 48 are utilized, one stud 48 extends centrally
7 upwardly from the base 30 of the one track wall 28 so as to be straddled
8 by the pair of through bolts 74 and aligned with the stud 68 of the
9 substrate 16, the other stud 48 depends centrally from the base 30 of the
10 other track wall 28 so as to be straddled by the pair of through bolts 74
11 and be aligned with the stud 68 of the substrate 16, and the at least two
12 diagonal braces 44 are eight, a pair of each extend from each side wall
13 20 of each bracket 14, diagonally outwardly in opposite directions.

14 It will be understood that each of the elements described above, or
15 two or more together, may also find a useful application in other types
16 of constructions differing from the types described above.

17 While the invention has been illustrated and described as embodied
18 in joints for constructing a shear wall, however, it is not limited to the
19 details shown, since it will be understood that various omissions,
20 modifications, substitutions and changes in the forms and details of the
21 device illustrated and its operation can be made by those skilled in the
22 art without departing in any way from the spirit of the present invention.

23 Without further analysis, the foregoing will so fully reveal the
24 gist of the present invention that others can, by applying current
25 knowledge, readily adapt it for various applications without omitting
26 features that, from the standpoint of prior art, fairly constitute
27 characteristics of the generic or specific aspects of this invention.